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REMARKS

Examiner Shingleton is thanked for the personal interview with applicant and the undersigned attorney held on 12/16/2005. The substance of the interview was as stated in the Interview Summary (PTOL-413) of 12/16/2005 prepared by the examiner, as amplified by these remarks.

Summary of this Paper

Specification: By this paper, applicant has amended the specification to clarify a passage that might be deemed to be inaccurate. With the specification thus amended, it is believed that the rejection based on 35 USC 112 has been overcome.

Claims: Certain of the claims have been amended to more particularly point out that which applicant regards as the invention and the rejections based on 35 USC 103 are believed to have been overcome.

In particular, each independent claim now recites that at least one of the recited reactive loads is a transducer or that each of the recited paths (in the case of claim 63) comprises a transducer. The examiner was understood to be of the view at the foregoing interview, at least preliminarily, that this change to the claims would render them allowable (as discussed in more detail hereinbelow).

It is believed that these amendments will not necessitate any new ground of rejection because this aspect of the invention was already present in at least some of the claims, e.g., claims 19 and 68. Accordingly, it is respectfully requested that the present claim amendments are properly enterable at this time. It is also respectfully requested that if any further rejection of the claims is made based on any newly cited art, that such rejection not be made final.

Claims 59-62 have now been canceled. (Although the point is moot in light of the cancellation of these claims, applicant would point out that, contrary to the language of claim 59, the high-frequency components in Lastruci—cited in rejecting these claims—are differential mode signals, not common-mode signals.)

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Withdrawn Claims: As discussed in further detail hereinbelow, it is believed that the claims previously withdrawn from the application are now properly rejoined herein and are believed to be allowable.

Specification Amendment

Based on aforementioned interview, applicant understands the basis for the outstanding rejection under 35 USC 112 to have been two-fold. Firstly, it is believed that the examiner was of the view that applicant had not established how it is that the relationship $[i_{L1}(t) + i_{L2}(t)] \approx 0$ can be true at all times, given that at least some of the time, the “outside” terminals of inductors 39 and 43 (taking FIG. 4A as illustrative) are at some times both connected to a positive voltage.

On this point, applicant pointed out—and it is believed that the examiner understood it to be the case—that because this is a reactive circuit, the voltages and currents in the circuit are not necessarily in phase alignment as they would be in a strictly resistive circuit. Thus the fact that the voltages at the “outside” terminals of inductors 39 and 43 may both be positive at particular times does not necessarily mean that currents $i_{L1}(t)$ and $i_{L2}(t)$ will both also be positive (i.e., flowing “downward” in the FIG.) at those same times. Rather, because of energy storage and considerations of back EMF in the various circuit elements—particularly in common-mode inductor 41—the voltage and current phases will not track as they would in a strictly resistive circuit.

Secondly, as to the specific relationship $[i_{L1}(t) + i_{L2}(t)] \approx 0$ being true at all times, this is readily seen by considering the operation of the circuit from the frequency domain perspective. Applicant pointed out that since the common-mode inductor 41 isolates switching frequency energy from the loads (see, e.g., ¶0047), then what flows in the loads L1 and L2 is substantially only baseband signals. Moreover, as pointed out at ¶0049 of the specification—and as reiterated by applicant at the interview—those baseband signals in the loads are, essentially, replicas of baseband signals B and B' (FIGS. 3A and 3B) that modulate the switching signal. The two

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baseband signals B and B' are the inverse of one another, due to inverter 8 (FIG. 2B) and as can be seen in FIGS 3A and 3B. That is, baseband signals B and B' are 180 degrees out of phase with one another. Thus the signals $i_{L1}(t)$ and $i_{L2}(t)$ in loads L1 and L2 are also 180 degrees out of phase with one another. Therefore when signal $i_{L1}(t)$ has some value x, signal $i_{L2}(t)$ has substantially the value $-x$ and thus $[i_{L1}(t) + i_{L2}(t)] \approx 0$ at all times.

Examiner Shingleton pointed out that ¶0045 could be understood as being inconsistent with the above because of how that paragraph was worded. He pointed out that the paragraph implies that whenever, for example, FETs 35 and 37 are ON, that currents $i_{L1}(t)$ and $i_{L2}(t)$ would both always be positive which, if true, would negate the relationship $[i_{L1}(t) + i_{L2}(t)] \approx 0$ being true at all times. To the extent that ¶0045 implied this, however, it would be inconsistent with numerous statements made throughout the specification that makes clear that the overall operation of the circuit is one in which $[i_{L1}(t) + i_{L2}(t)] \approx 0$ at all times, as well as being inconsistent with what the person skilled in the art knows about reactive circuits—namely that the voltage and current phases do not track one another. Therefore, the minor amendments made to ¶0045 herein to address the concern raised by the examiner have simply made ¶0045 more general, thereby obviating any possible inconsistency in the specification without adding any new matter. Indeed, the amendments made to ¶0045 simply bring it into conformance with how the person skilled in the art would have understood how the circuit works in light of the extensive explanation of the circuit's theory of operation appearing throughout the specification.

Claim Amendments

The non-withdrawn independent claims remaining in the application are claims 1, 9, 34 and 63.

Each of the independent claims 1, 9, 34 and 63, as amended, recites that at least one of the recited "loads" is a transducer or that each of the recited paths (in the case of claim 63) comprises a transducer.

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Those claims had been rejected on the basis that Tokumo's filter condensers 7 and 7' could be called "loads," even though the "real" load in Tokumo is load 9—illustratively a speaker.

Applicants do not agree that it is reasonable to refer to filter condensers 7 and 7' as "loads." However, that issue is rendered moot by the aforementioned amendment to claims 1, 9, 34 and 63, reciting that at least one of the recited loads is a transducer or that each of the recited paths (in the case of claim 63) comprises a transducer.

In the interview, Examiner Shingleton was understood to be of the view (although no commitment was made) that this amendment to each independent claim would distinguish the invention from Tokumo (and, applicant notes, would thus distinguish the invention from any obvious combination of Tokumo with Nishijama). See Interview Summary (PTOL-413) of 12/16/2005. Although it was not explicitly stated by the examiner at the interview, it is believed that the examiner recognized that the person skilled in the art would not have any motivation to use transducers in place of condensers 7 and 7' in Tokumo since Tokumo does not envision condensers 7 and 7' to be the recipients of the useful output signal. They are there only to help isolate the high-frequency switching signal from the load 9. Absent applicant's teachings, it would make no sense to substitute transducers for one or both of Tokumo's condensers 7 and 7'.

Through oversight, applicant failed to point out during the interview that applicant's dependent claims 19 and 68 already recited that at least one of the reactive loads was a transducer. Applicant believes those claims were allowable on that basis. Claims 19 and 68 have been amended to conform their language to their respective base claims as amended, given that those base claims now recite that at least one of the loads is a transducer.

Other amendments have been made to various dependent claims to render them in proper form in view of amendments made to their parent claims and/or to more particularly point out that which applicant regards as the invention. For example, various claims now recite a "fixed potential" in relation to the loads' common node.

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Withdrawn Claims Now Allowable

In light of the fact that applicant believes that generic claims are now in condition for allowance, it is believed that all of the withdrawn claims are now properly rejoined in this case, pursuant to 37 CFR 1.141.

In particular, all of the withdrawn claims are in dependent form with the exception of claim 52. Therefore, it is believed that all of the withdrawn claims meet the requirements of 37 CFR 1.141—namely that the application contains an allowable claim generic to all the species and that all the claims to species in excess of one (i.e., claim 52) are written in dependent form.

It is noted in this regard that withdrawn independent claim 52 has been amended similar to the other independent claims to recite that at least one of the loads is a transducer.

In view of the foregoing, it is respectfully requested that the withdrawn claims be rejoined in this case and be allowed along with the claims now pending.

Reconsideration is requested.

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